

BOOSTEN -- Appln. No.: 10/597,749

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AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions and listings of the claims in the application:

1-17. (Cancelled)

18. (Previously presented) A system for controlling an interventional procedure in an organ of a patient comprising:

- an intervention device comprising detectable markers positioned within the target organ, a displaceable catheter, and a stereotactic navigation system to position the detectable markers and displaceable catheter;

- an imaging unit arranged to acquire images of the target organ along with the detectable markers and the displaceable catheter;

- a computing unit configured to carry out the steps
 - calculating a motion-corrected organ-oriented three-dimensional coordinate system based on the images;
 - generating a spatial roadmap representing an envisaged trajectory of the displaceable catheter within the coordinate system by interrelating the spatial positions of the detectable markers with interactive user input to alter or redraw the roadmap;
 - monitoring the spatial position of the displaceable catheter;
 - determining a discrepancy between the spatial position of the displaceable catheter and the roadmap and calculating a navigational correction; and
 - controlling the navigation system to apply the navigational correction to the position of the displaceable catheter; and
- a user interface arranged to display
 - images of the target organ, the spatial position of the detectable markers, the displaceable catheter, and the roadmap; and

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a control screen displaying the correction to be applied to the navigation system and accepting interactive user input for the correction.

19. (Previously presented) The system of claim 18, further comprising the computing unit configured to carry out the steps:

monitoring the spatial position of the detectable markers;
determining a displacement of a detectable marker;
recalculating the roadmap based on the displacement; and
sending a signal to the navigation system to automatically position the displaceable catheter.

20. (Previously presented) The system of claim 18, further comprising an imaging unit arranged to acquire high resolution images.

21. (Previously presented) The system of claim 18, further comprising the imaging unit employing an X-ray beam or magnetic resonance acquisition.

22. (Previously presented) The system of claim 18, further comprising an imaging unit arranged to acquire images by rotational scan of an X-ray source around the target organ.

23. (Previously presented) The system of claim 18, the intervention device further comprising a catheter adapted to measure cardiac action potentials within the target organ.

24. (Previously presented) The system of claim 18, wherein the roadmap is arranged to represent a burning path for an ablating catheter.

25. (Previously presented) The system of claim 18, further comprising sending a signal to warn the operator of a change in configuration of the detectable markers.

26. (Previously presented) The system of claim 18, further comprising the user interface arranged to display actual electrical activity of tissue of the target organ.

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27. (Previously presented) A method for controlling an interventional procedure in an organ of a patient comprising:

- providing an intervention device comprising detectable markers positioned within the target organ, a displaceable catheter, and a stereotactic navigation system to position the detectable markers and displaceable catheter;

- providing an imaging unit arranged to acquire images of the target organ along with the detectable markers and the displaceable catheter;

- providing a computing unit configured to carry out the steps

- calculating a motion-corrected organ-oriented three-dimensional coordinate system based on the images;

- generating a spatial roadmap representing an envisaged trajectory of the displaceable catheter within the coordinate system by interrelating the spatial positions of the detectable markers with interactive user input to alter or redraw the roadmap;

- monitoring the spatial position of the displaceable catheter;

- determining a discrepancy between the spatial position of the displaceable catheter and the roadmap and calculating a navigational correction; and

- controlling the navigation system to apply the navigational correction to the position of the displaceable catheter; and

- providing a user interface arranged to display

- images of the target organ, the spatial position of the detectable markers, the displaceable catheter, and the roadmap; and

- a control screen displaying the correction to be applied to the navigation system and accepting interactive user input for the correction.

28. (Previously presented) The method of claim 27, further comprising providing a computing unit configured to carry out the steps:

- monitoring the spatial position of the detectable markers;

- determining a displacement of a detectable marker;

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recalculating the roadmap based on the displacement; and
sending a signal to the navigation system to automatically position the displaceable catheter.

29. (Previously presented) The method of claim 27, further comprising providing an imaging unit arranged to acquire high resolution images.

30. (Previously presented) The method of claim 27, further comprising providing an imaging unit employing an X-ray beam or magnetic resonance acquisition.

31. (Previously presented) The method of claim 27, further comprising providing an imaging unit arranged to acquire images by rotational scan of an X-ray source around the target organ.

32. (Previously presented) The method of claim 27, further comprising providing an intervention device with a catheter adapted to measure cardiac action potentials within the target organ.

33. (Previously presented) The method of claim 27, further comprising generating a spatial roadmap arranged to represent a burning path for an ablating catheter.

34. (Previously presented) The method of claim 27, further comprising sending a signal to warn the operator of a change in configuration of the detectable markers.

35. (Previously presented) The method of claim 27, further comprising providing a user interface arranged to display actual electrical activity of tissue of the target organ.